

The rise and fall of Bronze Age centers around the Central Iranian Desert – a comparison of Tappe Hesār II and Arismān

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The circum-desert zone of the Iranian plateau around the Dašt-e Kavir was the stage for the emergence of urban centers during the mid 4th to early 3rd millennium BC, following the development of long-distance trade in various materials including metal and lapis lazuli. This process is understood mostly as an off-shoot of the emergence of urban civilization in Uruk period Mesopotamia. The economic basis of Uruk period Mesopotamia seems to have been the diversity of subsistence resources, including irrigable agricultural soil that provides two to three harvests per year, wide pasture lands and aquatic resources such as fishing. Another natural advantage seems to have been the possibility of bulk scale transport via the major waterways. In conjunction with a system that ensured the “domestication of human resources” – that is, the exploitation of human labor force – through a sophisticated administrative organization, these factors provided the basis of the “Mesopotamian advantage”, as Guillermo Algaze has termed it.¹ Ultimately, it was the combination of these factors that propelled the “Sumerian take-off”,² a term chosen to describe the socio-economic dynamics set free within this self-perpetuating and self-enforcing process towards increasing complexity.³

The emergence of an elite class is a natural outcome of this process, and this was another factor in propelling this development through an increasing demand for markers of status and prestige such as exotica, metals and semi-precious stones. Since almost no such materials are available in the alluvial plain of Mesopotamia, the need to obtain them from far away through the establishment of long-distance relations is a natural consequence. The so-called “Uruk expansion” is the visible material condensation of the Uruk sphere of influence related to the enlargement of long-distance relations. However, the visibility of Uruk influences on the indigenous cultures of the surrounding mountainous areas does not by any means indicate a political domination, such as the oft-used term

“Uruk expansion” might imply. I will not elaborate on this theme anymore here, but research in Syria and Turkey⁴ and, to a lesser extent, in Iran over the last two decades has established a strong local dynamic in the development of the respective centers in the highlands that now form the counterpart – and the trade partners – of the Uruk communities.

The following paper is aimed at a comparative investigation of two urban centers emerging far from the Uruk heartland, on opposite edges of the Central Iranian desert called the Dašt-e Kavir. One is Tappe Hesār, considered a major center of copper, lead and semi-precious stone production during the 4th–3rd millennia BC on the northern edge of the desert and along the Great Khorassān Road. The second site is Arismān, a metal producing site on the southwestern edge of the desert where joint Iranian-German excavations during the years 2000–2004 have revealed a contextually controlled assemblage of the mid 4th to early 3rd mill. BC. This comparison should allow for an understanding of common trends in these centers, while at the same time individual characteristics should become visible that will provide a basis for further culture-historical interpretation.

Both sites – Hesār and Arismān – are settlement sites with an agricultural subsistence basis and additional craft industries. Both settlements are shifting sites, where occupied space is moved frequently, and thus the result is a less marked mound formation than it is observed in other parts of the Iranian highlands, and in Western Asia in general.

Tappe Hesār

Tappe Hesār⁵ is an extended site occupied from the late 5th to the end of the 3rd mill. BC in the im-

¹ Algaze 2001.

² Algaze 2007.

³ For general discussion of these issues, see Nissen 1999; Pollock 1999; Mierop 2002.

⁴ See contributions in several conference volumes, esp. Stein 1999; Rothman 2001; Postgate/Campbell 2002 for the current status of research.

⁵ Excavations carried out in 1931–32 by Erich F. Schmidt for the University of Pennsylvania Museum (Schmidt 1933; Schmidt 1937), occasional visits in 1956, 1971, 1972 and systematic surface surveys in 1972 (Bulgarelli 1974; Deshayes 1975; Dyson 1985), and the “Restudy project” carried out in 1976 as

Table 1
Chronological chart for
the 4th to 3rd mill. BC.
sites of Tappe Hesār
and Arismān, Tappe
Sialk and Tappe Yahyā
(based on Dyson 1987;
Amiet 1985;
Chegini et al. in prep.;
Potts 2001)

Phase (after Dyson 1987)	Hesār	Arismān	Sialk	Yahyā	estimated absolute dates
Proto-Elamite 2	Early III	slag heap E area C phase 3 (graves)	IV 2		2900–2600
Proto-Elamite 1	Late II (main mound building 3a)	slag heap A area C erosion phase and secondary workshops		IVC (2)	3100–2900
Proto-Elamite transitional	Middle II (main mound building 2, 3; North hill CF 57,58)	area C phase 6–4 slag heap D	IV 1	VA	3400–3100
	Early II (South Hill DF 89)	area B pottery kilns	hiatus? III 6–7	VB	3600–3400
Chalcolithic 6	Terminal I (North hill CF 57 deep test; South Hill below metal- working phase)	area B occupation	III 6–7		3900–3600

mediate vicinity of the town of Dāmghān. It consists of several independent mounds: one major visible mound cluster and two smaller pinnacles at about 200 m distance to the south.⁶ The site shows evidence of copper and lead processing and seems to have been a major center of lapis lazuli and carnelian bead fabrication.

In the original excavation report, Schmidt⁷ distinguished three major chronological periods I–III, which were then further divided into sub-phases. In this, period I refers to the period of painted pottery that can be largely correlated to the Sialk III sequence; period II is characterized by the gradual replacement of the painted wares by a monochrome grey ware.⁸ Period III corresponds to the 3rd mill. BC Early Bronze Age and shows strong relations with the north, especially the Gorgan Plain with Torang Tappe IIIB, Šāh Tappe II and ultimately Namazga V.⁹

There are, however, several problems with the chronology of Hesār.¹⁰ As Schmidt himself pointed out, his phase subdivision reflects typological considerations, not stratigraphical observations. A second problem with his chronology is the inclusion of grave groups into the architectural layers into which these graves had been dug from levels further up.

The Re-study project of 1976 provided a revised chronology based on stratigraphic observations of architectural layers that could fortunately, for the major part, be linked to the Schmidt sections, and is corroborated by radiocarbon dating.¹¹ One important aspect of the revised chronology is the observation that some of the building structures assigned to period IIIB by Schmidt belong in fact to period II.¹² Unfortunately the grave groups recognized by Schmidt have not yet been integrated into the new chronology.¹³ For the purpose of the current paper, the only possible consequence is to leave out evidence from the graves, and to concentrate on the stratigraphically controlled settlement evidence of period II and the survey evidence as far as it can be linked into the sequence.

The following study is aimed at a comparison of the two sites Tappe Hesār and Arismān. Therefore, the time span under discussion will be limited to Tappe Hesār II, which can, in terms of absolute dating, be roughly equated with the complete Arismān occupation period and can further be correlated with Proto-Elamite sites to the west.¹⁴ Hesār II can, based upon the data of the Restudy Project, further be subdivided into three subphases, early II, middle II and late II. There is still some difficulty in understanding the transition from the end of the Chalcolithic period to the beginning of a new era (**Table 1**), so far only investigated on the South Hill

a joint project between the Iranian Center for Archaeological Research, the University of Pennsylvania and the University of Turin (Dyson 1987, 651–652; Dyson/Howard 1989) provide data on which this study will be based.

⁶ Schmidt 1933, 331 gives an estimate of 6 ha. for the total of the site.

⁷ Schmidt 1933, 338–339; Schmidt 1937, 19.

⁸ Despite the almost complete lack of clear ceramic analogies to the south, the period is equated with the Proto-Elamite chronological horizon, comp. Dyson 1987, 656.

⁹ Dittmann 1986 for a discussion of the northeastern relations.

¹⁰ Dittmann 1986, passim, and esp. 100 with footnote 4; Dyson 1987, 652–653.

¹¹ Dyson 1987; Dyson/Remsen 1989; Dyson/Lawn 1989.

¹² Dyson 1987, 653.

¹³ The task of assigning the graves to the correct strata is currently undertaken by Ayşe Gürsan Salzmänn within the framework of her studies of the Schmidt archives at the University of Pennsylvania. I owe all information on that work to her personal communication and her lecture at the conference “Seven thousand years of culture and civilization of Hissar” at Dāmghān, 17th–19th february, 2007.

¹⁴ Dyson 1987.

of Hesār and apparently not linked to any other stratigraphical sequence.

Arismān

Arismān¹⁵ is a flat site extending over almost 1 square km on the southwestern edge of the Dašt-e Kavir, about 60 km southeast of the town of Kāšān and of Tappe Sialk, the major reference point for prehistoric chronology in this part of the Iranian Plateau. Cultural layers reach a maximum of 1.6 m thickness, and the site must be considered a shifting settlement where a horizontal stratigraphy rather than a vertical sequence can be observed. Excavations¹⁶ yielded evidence for occupation during the 4th to early 3rd millennia BC, and determined the function of the site as a major metal-processing center. In terms of chronology, an earlier settlement followed by workshop areas dating from the first half of the 4th mill. was excavated in area B. On the basis of ceramic comparisons, this can be correlated with Sialk III6–7, thus with the very end of the Sialk III sequence, which would fall into the end of Chalcolithic 6 in the ASPRO system or to the very beginning of what Dyson has termed “transitional Proto-Elamite”.¹⁷ A younger settlement with Proto-Elamite characteristics existed during the second half of the 4th mill. BC in area C, during which the copper production on the outskirts of the settlement reached to a maximum. This settlement can be correlated to Sialk IV1 or “Proto-Elamite 1” in Dyson’s terminology (**Table 1**). A slightly later usage of this area as a burial ground is contemporaneous with Sialk IV2, resp. “Proto-Elamite 2”. The copper production continued into the first half of the 3rd mill. BC, but related settlement remains have not yet been found.¹⁸

Pottery production

The amount of pottery collected from excavations in both sites indicates that a pottery production must have existed there. The surface survey of Hesār revealed no kiln wasters nor overfired pottery sherds indicating ancient pottery production sites¹⁹, and the only evidence found was a kiln eroding out from the section of one of Schmidt’s trenches that he had not reported on. However, the Restudy Project identified three pottery kilns dating to the late phase of period II in squares DF88/89 on the South Hill²⁰ and more kiln remains²¹ from the Main Mound. These kilns (**Fig. 1,1**) are rectangular chambers and function as horizontal kilns, with the fuel pit and the firing chamber located at opposite sides of the chamber. This apparently highly fuel-efficient kiln type was widely used in Bronze Age sites in Turkmenistan and Sistan²² and stayed in use at Hesār until the end of period III.²³

There is no excavated evidence of older pottery production at Tappe Hesār. Nevertheless, the analysis of pottery showed that the clay used throughout all major occupation periods is of local origin, so workshops must have existed.²⁴ M. Tosi²⁵ suggested the possibility that pottery production and especially pottery firing may have taken place outside the settlement in satellite sites, such as has been observed for the Šahr-e Sukhte environs, but a survey of the Hesār neighborhood²⁶ failed to identify any such sites.

In Arismān, on the other hand, we can observe the existence of specialized pottery workshop areas with concentrations of kilns and lots of kiln wasters and dumped pottery in area B, thus at the very beginning of the Arismān occupation sequence and at the end of the period of painted pottery. Nothing had indicated their existence on the surface, however, so that the situation seems not to differ much from that at Hesār. The Arismān kilns²⁷ fall into two different construction types (**Fig. 1,2**), although both are round, up-draught kilns with a combustion chamber below the firing chamber, separated by an intermediary floor. One type is round

¹⁵ Excavations were carried out between 2000 and 2004 within the overall framework of the interdisciplinary research project “Ancient Mining and Metallurgy on the Western Iranian Plateau” directed by A. Vatandoust from the Iranian Cultural Heritage and Tourism Organization (ICHTO) and by H. Parzinger and B. Helwing from the German Archaeological Institute (DAI). Fieldwork took place as a joint work between the Iranian Center for Archaeological Research (ICAR) and the German Archaeological Institute, under the directorship of Nasir Norouzzadeh Chegini and Hamid Fahimi for ICAR, and Hermann Parzinger and Barbara Helwing for DAI.

¹⁶ Several preliminary reports of this work have been published (in order of appearance): Chegini et al. 2000; Chegini et al. 2004; Fahimi/Helwing 1385 (2006); a publication of the results of the first five years of work is in preparation: Chegini et al. in prep.; Radiocarbon dates have been published by Görsdorf 2003; Görsdorf 2004; Görsdorf 2006.

¹⁷ Dyson 1987; Voigt 1987; for a full discussion of the relative chronology of Arismān area B, see R. Boroffka/Parzinger in prep.

¹⁸ For a discussion of relative chronology of Arismān area C, Helwing in prep.-a.

¹⁹ Tosi 1989, 20–24.

²⁰ These had already been excavated by Schmidt but had not been recognized as kilns due to their “chamber-like” appearance (Schmidt 1937, 106–107). – Compare Tosi/Bulgarelli 1989, 37 for stratigraphic position.

²¹ Howard 1989, 61–62 fig. 8.

²² Tosi 1989, 21 for the comparisons.

²³ One kiln from the North Flat, see Schmidt 1937, fig. 103, CF39, S8.

²⁴ Dyson 1987, 654.

²⁵ Tosi 1989, 20.

²⁶ Maurer Trinkhaus 1989.

²⁷ N. Boroffka/Becker 2004.

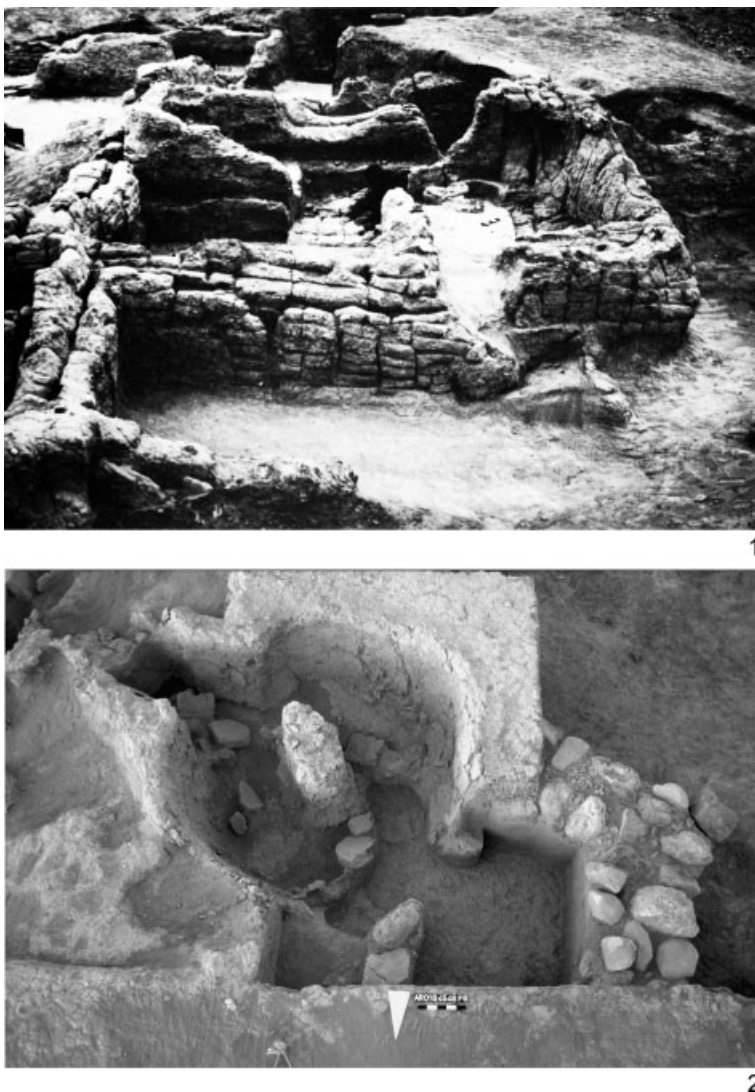


Fig. 1
Tappe Hesār (1) and
Arismān (2): Compari-
son of pottery kilns
(1 after Tosi 1989
Fig. 9; 2 Arismān
Photographic Archive)

with a diameter of approximately 1 m and an intermediary floor resting on buttresses along the outer wall. The second is much larger and has a long combustion channel, so that the ground plan is roughly keyhole shaped. The intermediary floor rests on the outer wall and on a central column inside the chamber.

As is the case in Hesār, pottery production is local, as is evident from the temper and raw materials used.²⁸ For the later pottery production, however, we have no evidence for production facilities, but the raw materials again show that the production was local.²⁹

²⁸ R. Boroffka/Parzinger in prep.

²⁹ Helwing in prep.-a.

After the end of the painted pottery tradition when close links between both sites are observed, the two sites embark on strongly divergent developments. At Arismān, a pottery assemblage with clear links to the Proto-Elamite horizon is characteristic.³⁰ Tappe Hesār, however, turns towards the production of grey or black pottery, often with burnished surfaces, that is closely linked to the pottery assemblages from the Gorgan Plain at Torang Tappe and Šāh Tappe.³¹ However, there are small components that indicate that the two traditions may have been distantly linked nevertheless. There is a component of grey ware in Arismān: in the earlier area B assemblages, a distinctive polished light-grey ware occurs, mostly in the shape of jars with rope decoration.³² In the younger Proto-Elamite assemblages occurs grey ware, such as fragments of footed goblets, that can be compared to the Hesār II grey ware (Fig. 2), and thus indicates at least some links with the Northeast.

Thus, the local production of pottery can be attested to both places throughout the 4th and into the 3rd mill. BC. The assemblages indicate that during the painted pottery period – Hesār I–II or Sialk III in Arismān – both sites share common traits and can be considered part of a larger cultural complex. By the end of period II in Hesār, a new orientation of the site's cultural affiliation with the Northeast can be observed, while Arismān lies at the northern edge of the Proto-Elamite horizon of South Iran. Both sites must hence be considered as members of different cultural spheres.

Lithic production

A comparison of the lithic industry in Hesār and Arismān is difficult since only a small pre-selected sample is available for Hesār,³³ with debitage and production residues necessarily missing. The Hesār sample cannot be studied according to stratigraphic contexts since those are only indicated for the small group of blades. Altogether the assemblage comprises about 1/3 small leaf-points, projectiles of a type that seems to be restricted to period III contexts³⁴ and that also appear in sites on the eastern and southeastern edge of the desert at Šahr-e

³⁰ Helwing 2005 b.

³¹ For a discussion of stratigraphically controlled pottery assemblages from the Restudy Project's work on the Main Mound, see Dyson/Remsen 1989, 69–84.

³² R. Boroffka/Parzinger in prep.

³³ Rosenberg 1989.

³⁴ Dyson/Remsen 1989, 97–98.

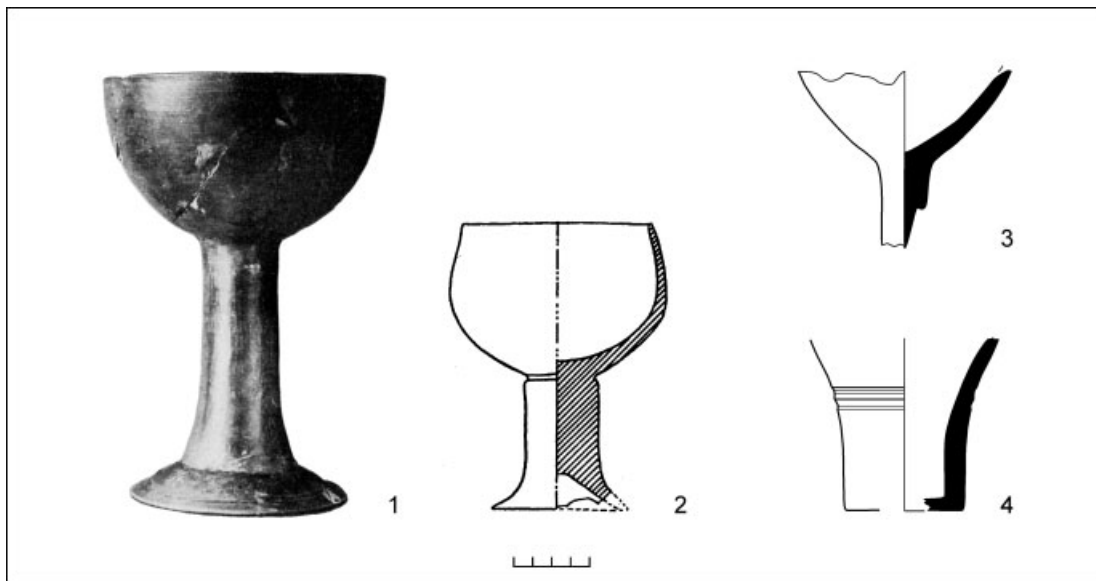


Fig. 2
Tappe Hesār (1–2) and
Arismān (3–4): Comparison of grey/black ware
(1 after Schmidt 1937, fig. 68; 2 after Schmidt 1937, pl. 26, H5153;
3–4 Helwing in prep.)

Sukhte and Jiroft,³⁵ and on sites in Turkmenistan.³⁶ The remainder consists largely of large blades and shows the application of direct hard percussion and the production from single platform cylindrical or conical cores. This is considered indicative of a specialized industry aimed at a high output of standardized blades for usage in an agricultural context and for “non-specific tasks”; therefore, the lithic industry seems to be systematic production by a few – but not fulltime – specialists.

An industry related to a functional specialization in bead production existed at Tappe Hesār as well.³⁷ Small-size debitage was used as blanks, and flakes with adhering lapis lazuli dust were registered. No comparable material is known from Arismān.

The lithic assemblage from the transitional Proto-Elamite contexts at Arismān area B³⁸ shows a blade industry with a strong emphasis on sickles from specific raw material sources, indicating a specialized production for a specific function within an agricultural context. This specialized sickle industry is replaced during the Proto-Elamite 1 period by an industry aimed at small bladelets and flakes, produced from locally available nodules of flint that is of lesser quality than the previously used material, but instead may have been chosen for its colours.

The lithic industry of the two sites is, as far as can be judged, highly divergent. Leaving the leaf points aside, it can be stated that large sickle blades were used in Hesār throughout the occupational sequence, while the preference for large sickle blades in Arismān is, with the onset of the Proto-Elamite occupation, replaced by an emphasis on small scale debitage.

Architecture

A divergent development of the two sites is evident from a look at architectural traditions as well: The pisé architecture used in both sites during the late Hesār I or Chalcolithic 6 period is followed by the adoption of mudbrick architecture in both sites. However, Arismān also adopts the standardized brick sizes used in the Proto-Elamite sphere as well as an urban layout (**Fig. 3**) that matches similar building layouts from Proto-Elamite sites such as Yahyā IVC³⁹ and Malyān⁴⁰. Hesār, on the other side, continues with rather organic, agglutinative house plans such as they existed on the Main Mound⁴¹ and on the South Hill.⁴² A new feature towards the end of period II is the usage of mould-made bricks⁴³ and the adoption of a new layout of

³⁵ For Šahr-e Sukhte, see Sajjadi 2000 (1380) figs. on p. 8; 11; 45; for Jiroft: Lecture by Jalal Rafifar, conference “The Halilrud civilization” at Jiroft, February 2005.

³⁶ For example Altyn-Depe, see Masson 1988, pl. 15,2–3.

³⁷ Bulgarelli 1979; Rosenberg 1989, 111.

³⁸ Helwing/Thomasky in prep.

³⁹ Potts 2001, 1–54 see fig. 1.1, 1.2 for building plans.

⁴⁰ Sumner 2003, fig. 8–9; 12 for brick plans; pl. 3; 5–6 for photographs showing the brick-laying system.

⁴¹ Howard 1989, 56 fig. 1.

⁴² Tosi/Bulgarelli 1989, fig. 1.

⁴³ Dyson/Remsen 1989, 89.

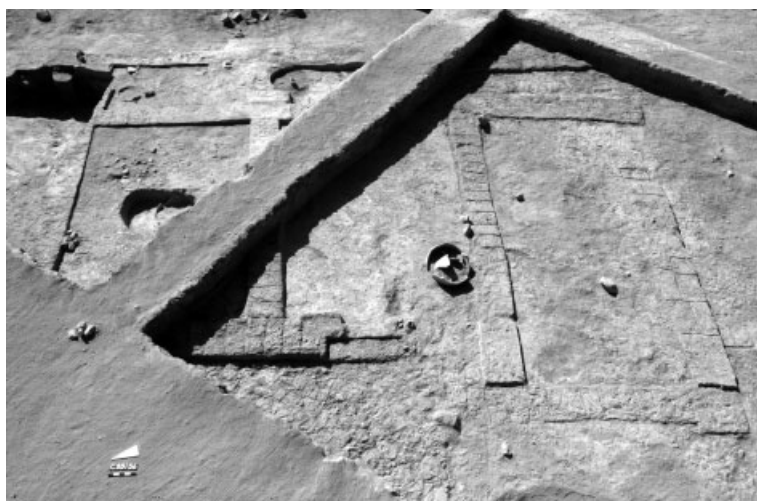


Fig. 3
Arismān area C, architecture of the Proto-Elamite period (Arismān Photographic Archive)

roughly rectangular one-room buildings with buttressed walls (**Fig. 4**).⁴⁴ The new building material also allows for the construction of small stepped niches inside walls, a feature that is also well-known from sites in Turkmenistan.⁴⁵

As has been the case with the pottery assemblages and the lithic materials, a comparison of architectural features allows for a clear distinction of two different and divergent cultural affiliations of the two sites during the later part of the 4th and the beginning of the 3rd mill. BC. Hesār II is closely tied to the cultural development of the Gorgan Plain and Southern Turkmenistan, while Arismān fully participates in the Proto-Elamite sphere.

Metallurgical production

Bot Tappe Hesār and Arismān have been considered major metal-producing centers⁴⁶, since both sites are covered with slag indicating large-scale production on the site.

At Hesār, no separate slag heap was visible on the surface, but three areas with a high density of slag clusters exist. Two of these are assigned to period II, based on the type of slag and radiocarbon dates, and are located on the Twin Mounds in the south, on the southwest flank of the South Hill and on the South side of the Painted Pottery Flat.⁴⁷ This indicates a concentration of copper smelting

activities in the southwestern part of the site, probably at some distance from the domestic areas. Crucibles were not reported in the published evidence, although slag with adhering ceramic matrix was collected. This is probably a problem of the status of research,⁴⁸ since at least one small crucible was found in the deep sounding next to the Burnt Building⁴⁹.

The South Hill excavations of the re-study project helped to establish the stratigraphic position of the copper slag accumulations at the very beginning of period II. This situation relates to the re-use of an earlier building as a workshop and dump area. Associated with these seem to be large trays or pans⁵⁰ and numerous fragments of vitrified furnace lining. From a slightly later phase of the South Hill excavations was found a small round pit-like structure (**Fig. 5,1**) that may have been used as a pit furnace.⁵¹ An ingot mould was also excavated on the South Hill (**Fig. 6,1**).⁵²

In addition to copper working, silver processing is suggested at Hesār from litharge collected from the surface of the South Hill,⁵³ but not from excavated contexts.

At Arismān, there is now good diachronic evidence concerning the technology and organization of metallurgical production. At the beginning of the occupational sequence when area B is occupied by workshops for pottery and metal (thus Chalcolithic 6 to transitional Proto-Elamite in Dyson's terminology), the ores used seem to originate mostly from sources in the wider Qom – Kāšān area.⁵⁴ The technology applied is crucible smelting in pit furnaces (**Fig. 5,2**), thereby using crucibles with a massive base that are equally known from Tappe Qabrestān.⁵⁵ This technology has been developing in the area over the course of the Sialk III period and is also attested at older smelting sites on the desert rim that were documented during surveying.⁵⁶ Crucible smelting often yields only a little slag, so such an activity is not easily recognizable from surface investigations.

In the Proto-Elamite period at Arismān, we see the establishment of furnace smelting as a new technology, and related to this the existence of three large slag heaps on the edge of the settlement site. The actual furnace excavated at the site

⁴⁴ For the buttressed buildings in general, see Dyson/Remsen 1989, 84–89; Howard 1989, 56 fig. 1.

⁴⁵ Comp. Dyson/Remsen 1989, 94 fig. 19; 95 fig. 22 reconstruction with Masson 1988, pl. 1 upper photograph.

⁴⁶ Analysis of the Hesār and Arismān metallurgy is currently under process and results stated here are preliminary.

⁴⁷ Pers. observation by Christopher Thornton.

⁴⁸ Pigott 1989, 25 footnote 3.

⁴⁹ Pers. comm. C. Thornton at conference "Seven thousand years of culture and civilization of Hissar", Dāmghān 17th–19th february, 2007.

⁵⁰ Tosi/Bulgarelli 1989, 38 fig. 3.

⁵¹ Tosi/Bulgarelli 1989, 46–47 fig. 14–15.

⁵² Pigott 1989, fig. 8.

⁵³ Tosi 1989, 14.

⁵⁴ Pernicka 2004.

⁵⁵ Majidzadeh 1979, fig. 2,1.

⁵⁶ Chegini/Helwing in prep.

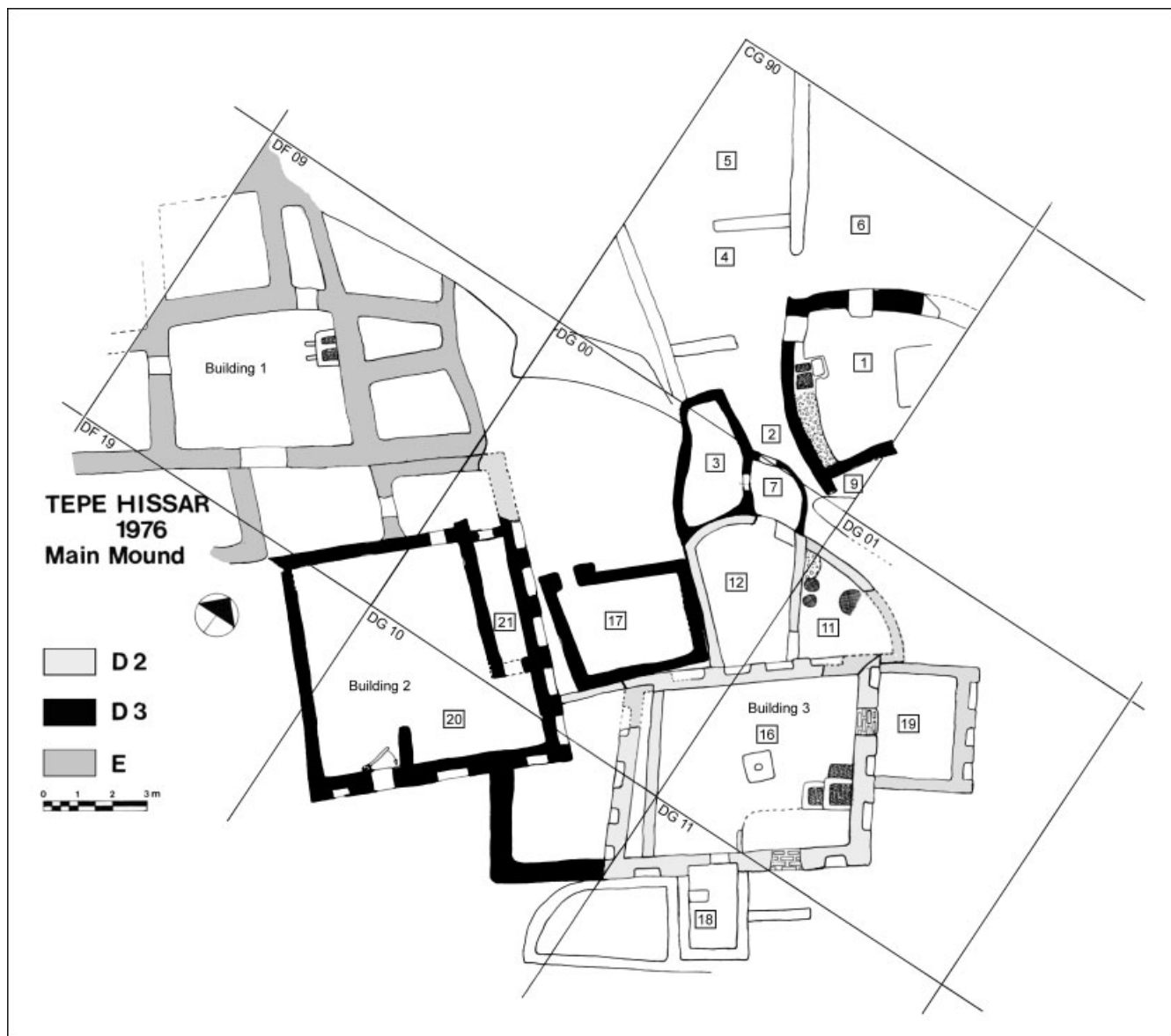


Fig. 4
Tappe Hesār Main Mound, architecture of period II (after Howard 1989 Fig. 1)

in area A dates to the first centuries of the 3rd mill. BC,⁵⁷ but the slightly older large slag heap D yielded large amounts of furnace lining without installation context, apparently from broken furnaces. The further casting and hammering of the copper into ingots (Fig. 6,2) and artifacts then took place inside the domestic quarter in area C.

With the fully developed Proto-Elamite 2 period, when the furnace in area A is in use, the domestic structures in area C that have decayed over some time are re-activated. Metallurgical workshops

such as fire platforms and casting places exist inside the ruins, as a “squatter occupation”. Similar usage of ancient house ruins has been observed at Hesār South Hill, and at Šahr-e Sukhte.⁵⁸

Silver production is attested by litharge in Arismān since the mid 4th mill. BC in secure contexts.⁵⁹ There is currently not enough evidence to trace a diachronic development with any certainty, but it seems that the cupels themselves become smaller through time.

⁵⁸ Salvatori/Vidale 1997.

⁵⁹ Pernicka 2004.

⁵⁷ Görsdorf 2003, 361.

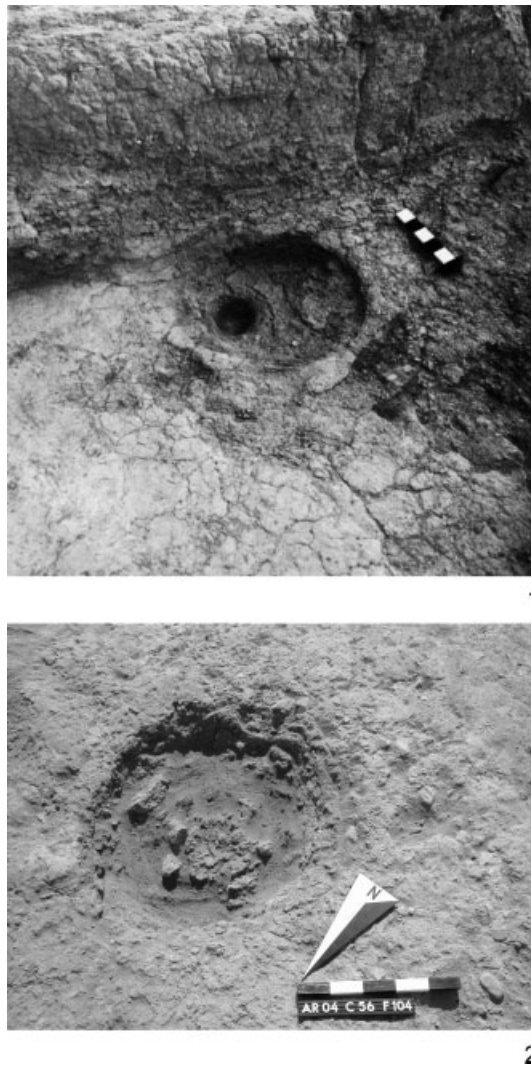
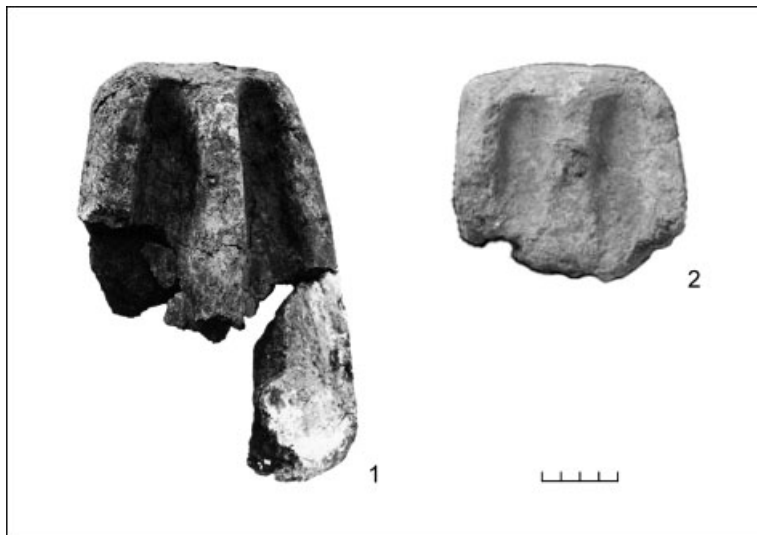


Fig. 5
Tappe Hesār (1) and
Arismān (2): pit structures
probably used
as pit furnaces (1 after
Tosi/Bulgarelli 1989,
Fig. 15; 2 Arismān
Photographic Archive)



Metal artifacts

A strong imbalance in artifact samples from Hesār and Arismān can be explained by the nature of the excavated contexts. The rich metal artifact assemblages at Hesār derive from graves, so that a set of typical shapes such as spirals used as bracelets (**Fig. 7,1**), double spiral head pins, leaf-shaped blades with slight midrib, and small star-shaped or round maceheads with tubular shaft can be defined.⁶⁰

There is hardly any burial evidence from Arismān before the Proto-Elamite 2 period, after the abandonment of the area C settlement. In consequence, the copper artifacts from occupational layers in Arismān consist mainly of scrap metal. The production of shaft-hole double axes during the Chalcolithic 6/ transitional Proto-Elamite period, and the replacement of that shape by flat axes can only be traced via the moulds used for casting them.⁶¹ Only the Proto-Elamite 2 grave horizon, which consists of several child burials in jars from area C phase 3, yielded several richly-equipped burials with copper arm spirals (**Fig. 7,2**) similar to the ones from Hesār.

Silver artifacts were found at both sites. At Hesār, they consist of small personal ornaments, such as beads and earrings, found in the graves.⁶² At Arismān, a silver pendant with soldered compartments and inlays of colorful stones was found in Area C that belongs to phase C-4, thus the Proto-Elamite re-use phase of the place. The technique of combining silver with other materials such as stone, gold or shell is also attested on other Proto-Elamite sites, for example at Sialk⁶³ and Susa⁶⁴, and from burials in the Kunji cave⁶⁵ in Khorramābād, but has not been applied anywhere in Hesār. Only the combination of lapis lazuli with gold is observed in Hesār, and this also only once⁶⁶.

Fig. 6
Tappe Hesār (1) and Arismān (2): ingot moulds (1 after Pigott 1989 Fig. 8a; 2 Arismān Photographic Archive)

⁶⁰ Schmidt 1937, pl. 28,B; 29.

⁶¹ Helwing 2005-c.

⁶² Schmidt 1937, 121 pl. 30A,H2983; H2178; H2994; H2982; H2659; H2879.

⁶³ Ghirshman 1938, 60 fig. 9 from grave 2, pl. 30,2c; pl. 30,1 from hoard.

⁶⁴ Tallon 1987, 263, 314 no. 1159, 1160; the three together are illustrated in Stöllner et al. 2004, 656–657 no. 244–246.

⁶⁵ Emberling et al. 2002.

⁶⁶ Schmidt 1937, 121 pl. 32, H2185.

Gold is equally found mostly in graves in Hesār,⁶⁷ and is rare in Arismān, where it only occurs as scrap from the industrial dump of area B⁶⁸ and as inlay in the silver pendant.

Semi-precious stone industry

Tappe Hesār II is famous as a center for the processing and preparation of blanks of semi-precious stones, especially lapis lazuli and carnelian, but also turquoise and chalcedony, mostly brought to the site from mines located further east.⁶⁹ For lapis lazuli, an origin in the lapis lazuli mines in Badākhshān in southern Afghanistan is most likely. For the dismembering of the raw material blocks, a specific lithic assemblage is used that includes burins for grooving the surface of the raw material to direct the breaking of the blocks, and borers to drill the holes into the beads.⁷⁰ It seems that only beads were completely produced at Hesār, while the rest of the material seems to have been shaped into blank blocks that were then sent further west. Stone vessels become a regular part of the find assemblages in Tappe Hesār only towards the end of period III.

At Arismān, there is no evidence for the existence of an industry of semi-precious stone, and the lithic assemblage does not include any types specifically related to the shaping of semi-precious stones. A small number of alabaster fragments from vessels are found in areas B and C,⁷¹ but these are not related to any actual production site.

Administration

At Hesār early period II, clay counting devices and labels are found in close association with the metallurgical dump from the South Hill.⁷² Three complete cylinder seals and one broken one attest to the knowledge of sealing practices at the site.⁷³ The unpublished half seal (H693) for which no secure context could be observed (eroding from sur-

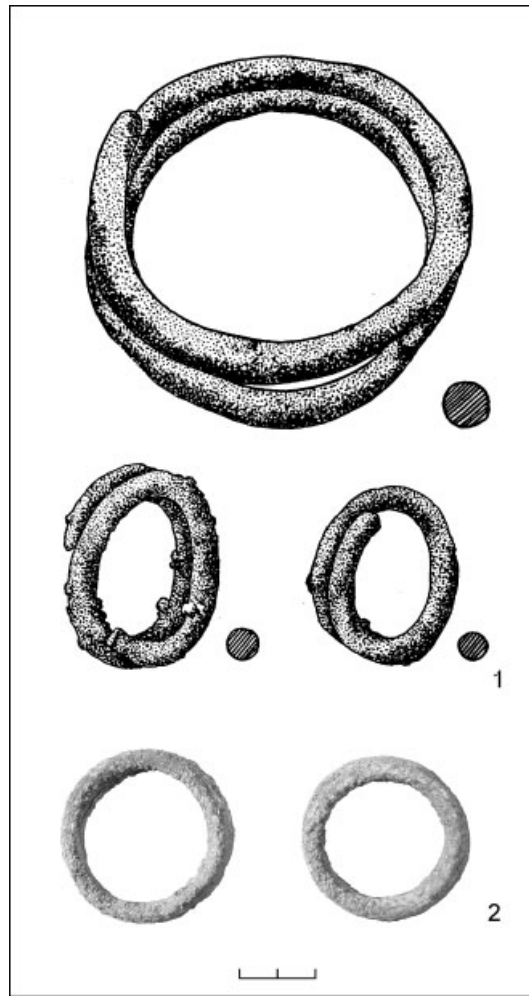


Fig. 7
Tappe Hesār (1) and
Arismān (2): copper
spirals (1 after
Schmidt 1937, pl. 28B,
H2194.H1919–1920;
2 Arismān Photographic
Archive)

face of low Mound close to Sassanian building) is of the Piedmont Gāmdat Našr type with close parallels in Susa ac. I: 15B.⁷⁴ Another seal (H116) found by Schmidt on the Main Mound and probably attributable to period II middle shows a standing cow in profile, that Schmidt interpreted as coming from Elam.⁷⁵ Although Dyson suggested a possible origin of that seal in the western part of the Proto-Elamite area, the seal is rather comparable to seals of the Indus culture.⁷⁶

At Arismān, the earliest evidence for administrative practice is a clay token found below the huge waste dump layer in area B, thus dated to the Chalcolithic 6 to transitional Proto-Elamite phase.⁷⁷

⁶⁷ Schmidt 1937, 121 pl. 30A, H2184; H1717.

⁶⁸ Chegini, et al. 2004; Stöllner et al. 2004, 651 no. 231.

⁶⁹ For an overview on semi-precious stones used in prehistoric Iran and their origins, see Brown 1991; Casanova 1992; Tallon 1995; Weisgerber 2004; for its distribution and circulation during the 4th to 2nd mill. BC, Herrmann 1964; Tosi/Piperno 1973; Moorey 1999; Casanova 2000.

⁷⁰ Tosi/Piperno 1973; Bulgarelli 1974, 20; Tosi 1989, 15–20, esp. fig. 6 for soapstone beads.

⁷¹ Helwing in prep.-b.

⁷² Tosi/Bulgarelli 1989, 39 fig. 5; 41 fig. 8.

⁷³ Schmidt 1937, fig. 118, H892; H3710; H116; Dyson/Remsen 1989, 78–79 fig. 4.

⁷⁴ Dyson 1987, 657–658.

⁷⁵ Schmidt 1937, 197.

⁷⁶ Franke-Vogt 1991, 62–66, esp. 65 assigns the seal to her motif group 03 “bulls with short horns”, but considers it as a piece of non-Indus origin.

⁷⁷ Helwing 2005 a, fig. 5.



Fig. 8
Arismān, seal of burnt
steatite (Arismān
Photographic Archive)

In area C, a figurative Proto-Elamite cylinder seal was found in the open joint between two mudbricks of a house in area C, probably stored away there sometime during the occupation of the building, thus Proto-Elamite 1 in date. From the re-use phase of the houses as workshops derive two more seals, one Piedmont Ġamdat Našr seal (**Fig. 8**) and one stylized figurative seal.⁷⁸

The occurrence of Piedmont Ġamdat Našr style seals in both Tappe Hesār and Arismān is significant because it corroborates the evidence for long-distance trade relations of the two sites. The distribution of these seals ranges from the foothill zone of the Zagros Mountains to eastern Proto-Elamite sites such as Yahyā and Malyan.⁷⁹

Both in Hesār and in Arismān a close association of the use of administrative devices with metallurgical activity can be stated.⁸⁰ This seems to demonstrate that the craftsmen were familiar with the sealing practices used elsewhere and deliberately adopted them in relation to their metallurgical production. The fact that no sealings were found in any of the two sites may indicate either that the sealed packages did not remain inside the settlement but were sent away. However, there remains the slight possibility that the seals were actually not used as real seals but were understood as trinkets, remote from their original function and meaning.

Conclusion

Considering the evidence discussed above, several points have become visible:

1. At Arismān, a pottery assemblage with clear links to the Proto-Elamite horizon exists in the second half of the 4th mill. BC. Tappe Hesār turns towards the production of grey or black pottery, often with burnished surfaces, that is closely linked to the pottery assemblages from the Gorgan Plain at Torang Tappe and Šāh Tappe. This shows that the two sites have a different cultural orientation.
2. The pisé architecture used during the late Hesār I period (Chalcolithic 6), respectively the late Sialk III period, is followed by the adoption of mudbrick architecture in both sites. During the second half of the 4th mill. BC, Arismān also adopts the standardized brick sizes used in the Proto-Elamite sphere as well as an urban layout that matches similar building layouts from Proto-Elamite sites such as Yahyā and Malyan. The Hesār architecture with buttressed buildings and wall niches is closely linked to similar building traditions observed in Southern Turkmenistan.
3. The metallurgical production is difficult to compare due to the unsatisfying research situation in Hesār. It can be assumed that both sites exploited copper resources accessible in the neighborhood or at medium distance from the sites. The use of furnaces is attested at both, and shapes of ingots and moulds indicate a closely comparable production.
4. The development of a fine ground stone industry of semi-precious stones in Hesār begins in period I and further proceeds throughout periods II and III, in these later periods with a strong emphasis on imported lapis lazuli and carnelian. Arismān has no stone industry to speak of, and instead engages fully with metallurgical production.
5. In terms of precious items produced at Arismān, the development of a silver industry is remarkable and has no obvious counterparts in Hesār. The most important factor at Hesār is instead the fine ground stone industry, aimed at the production of semi-precious stone beads and blanks, and later at stone vessels.
6. Administrative tools are used in both sites, and the prototypes for the tokens and seals used in both places can be found within the Late Uruk to Proto-Elamite sphere. The standing bovid seal from Hesār indicates at the same time eastern connections, a pattern not observed in Arismān. During the crucial centuries of the later 4th mill. BC, the two sites located at the northern and the southern edge of the Central Iranian desert thus develop cultural affiliations pointing in opposite directions (**Map 1**). Both sites specialize in precious items craft industries based on raw material available to them – copper and silver in Arismān, supplied from the

⁷⁸ Helwing 2005 a, fig. 5.

⁷⁹ Pittman 1994, fig. 25 for a distribution map.

⁸⁰ Dyson 1987, 660; Dyson/Remsen 1989, 79; Tosi 1989, 40.



Map 1
Tappe Hesār and Arismān: location of sites
on the Iranian Plateau

Nakhlak area and other mining districts, and lapis lazuli and carnelian processing in Hesār, material that came to the site from the sources in Badākhshān in Southern Afghanistan. At the same time, there is a parallel development at both sites regarding the adoption of Proto-Elamite administrative tools, although it is not known to which extent this borrowing included the take-over of the full set of administrative procedures. The most probable explanation for this pattern is that the ordinary material culture is diagnostic of the cultural affiliation of the two places, while administrative technology may have been borrowed from outside, by adopting devices that first became known in the Iranian highlands through the long-distance contact with the Uruk sites in Mesopotamia, where administrative technology was already in use during the first half of the 4th mill. BC.

Both sites manage to participate over several centuries in a long-distance exchange network that extended far beyond the cultural boundaries of the former Uruk and the later Proto-Elamite influence sphere. Products from Arismān circulated in the western Zagros Mountains and found their way into Ġamdat Naṣr/ED I sites in northern Iraq and the Syrian Ġazirah. At the same time, the inner-Proto-Elamite trade seems to cease during the first half of the 3rd mill. BC. Except for the precious silver pen-

dants, there is hardly any evidence for Central Iranian metal artifacts in Susa or other lowland sites. It seems as if the Proto-Elamite lands become more and more isolated and in consequence, the economic basis of the southern desert rim sites seems to dry up. Both Sialk and Arismān are given up during the early centuries of the 3rd mill. BC.

The northern desert rim sites undergo a different development. The lapis lazuli prepared at Hesār finds its way into elite households in urban centers of both Mesopotamia and Syria. It can be assumed that it continues to do so throughout the 3rd mill. BC although no actual production contexts of such a late date were excavated at Hesār. This trade obviously bypasses the Proto-Elamite lands, as was the case for the Arismān copper artifacts. The northern sites, before all Hesār, continue to flourish as craft centers and owe much of their wealth to their strategic position on the track of the Great Khorasan Road. They controlled the overland trade between southern Turkmenistan and Afghanistan on the one hand and western Iran and Northern Iraq and Syria on the other hand, and supplied semi-precious stones to the emerging urban centers there.

As the Proto-Elamite regions became more isolated, trade with Mesopotamia ceased, and the urban centers of the alluvial lands replaced it by

seeking new partners, via the Persian Gulf, in the lands of Magan (Oman) and Meluhha (Indus Valley). This provided opportunities for new players to enter the stage – the eastern and southeastern parts of the Iranian highlands, including Šāhdād, Jiroft and Šahr-e Sukhte, became a major focus of trade during the 3rd mill. BC while the craft centers on the northern edge of the Proto-Elamite lands, such as Tappe Sialk and Arismān, were abandoned. At the same time, the northern track – via Tappe Hesār and the Great Khorassan Road – continued to flourish as a center of trade and exchange.

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Bibliography

- Algaze 2001
G. Algaze, Initial social complexity in southwestern Asia. *Current Anthropology* 42, 2001, fasc. 2, 199–233.
- Algaze 2007
G. Algaze, The Sumerian takeoff. In: Elisabeth Stone (ed.), *Settlement and society: Essays dedicated to Robert McCormick Adams* (Los Angeles 2007) 343–368.
- Amiet 1985
P. Amiet, La période IV de Tépé Sialk reconsidérée. In: J. L. Huot/M. Yon/Y. Calvet, (eds.), *De L'Indus aux Balkans. Recueil à la mémoire de Jean Deshayes* (Paris 1985) 293–312.
- Boroffka/Becker 2004
N. Boroffka/J. Becker, Töpferöfen in Arismān. In: Stöllner et al. (2004) 218–221.
- Boroffka/Parzinger in prep.
R. Boroffka/H. Parzinger, Pottery of the Sialk III period. In: Chegini et al. in prep.
- Brown 1991
S. C. Brown, Lapis lazuli and its sources in Ancient Western Asia. *Canadian Society for Mesopotamian Studies, Bulletin* 22, 1991, 5–13.
- Bulgarelli 1974
M. G. Bulgarelli, Tepe Hisar. Preliminary report on a surface survey, August 1972. *East and West* 24, 1974, fasc. 1–2, 15–27.
- Bulgarelli 1979
M. G. Bulgarelli, The lithic industry of Tepe Hisar in the light of recent excavation. In: M. Taddei (ed.), *South Asian Archaeology 1977*, vol. 1 (Naples 1979) 39–54.
- Casanova 1992
M. Casanova, The sources of lapislazuli found in Iran. In: C. Jarrige (ed.), *South Asian Archaeology 1989* (Madison 1992) 49–56.
- Casanova 2000
M. Casanova, Le lapis-lazuli de l'Asie centrale à la Syrie au Chalcolithique et à l'Âge du Bronze: traits communs et particularités régionales. In: P. Matthiae/A. Enea/L. Peyronel/F. Pinnock (eds.), *Proceedings of the First International Congress on the Archaeology of the Ancient Near East* (Roma 2000) 171–184.
- Chegini/Helwing in prep.
N. N. Chegini/B. Helwing, Archaeological survey in the hinterland of Arismān and Kašān. In: Chegini et al. in prep.
- Chegini et al. in prep.
N. Norouzadeh Chegini/B. Helwing/H. Parzinger/T. Stöllner/M. Momenzadeh/A. Vatandoust (eds.), Early mining and metallurgy on the Central Iranian Plateau. Report on the first five years of research of the Joint Iranian-German Research Project. *Archäologie in Iran und Turan* (Mainz am Rhein in prep.).
- Chegini et al. 2004
N. Norouzadeh Chegini/B. Helwing/H. Parzinger/A. Vatandoust, Eine prähistorische Industriesiedlung auf dem iranischen Plateau-Forschungen in Arismān. In: Stöllner et al. (2004) 210–216.
- Chegini 2000
N. Norouzadeh Chegini/M. Momenzadeh/H. Parzinger/E. Pernicka/T. Stöllner/R. Vatandoust/G. Weisgerber, Preliminary Report on archaeometallurgical investigations around the prehistoric site of Arismān near Kashan, western Central Iran. *Archäologische Mitteilungen aus Iran und Turan* 32, 2000, 281–318.
- Deshayes 1975
J. Deshayes, Tesson de céramique peinte de Tappeh Hesār. In: F. Bagherzadeh (ed.), *Proceedings of the IIIrd Annual Symposium on Archaeological Research in Iran, 1974* (Tehran 1975) 103–120.
- Dittmann 1986
R. Dittmann, Rezension: P. Yule, Tepe Hissar – Neolithische und kupferzeitliche Siedlung in Nordostiran (1982). *Prähistorische Zeitschrift* 61, 1986, fasc. 1, 99–109.
- Dyson 1987
Dyson, Jr., The relative and absolute chronology of Hisar II and the Proto-Elamite Horizon of Northern Iran. In: O. Aurenche/J. Evain/F. Hours (eds.), *Chronologies in the Near East: Relative Chronology and Absolute Chronology 16,000–4,000 BP.*, *British Archaeological Reports. Int. Ser.* 379 (Oxford 1987) 647–678.
- Dyson/Howard 1989
R. H. Dyson/S. M. Howard (eds.), *Tappeh Hesār: Reports of the Restudy Project, 1976. Monografie di Mesopotamia II* (Florence 1989).

- Dyson/Lawn 1989
R. H. Dyson/B. Lawn, Chapter XVI. Key stratigraphic and radiocarbon elements for the 1976 Hesār sequence. In: Dyson/Howard 1989, 143.
- Dyson/Remsen 1989
R. H. Dyson/W. C. S. Remsen, Chapter VII. Observations on architecture and stratigraphy. In: Dyson/Howard 1989, 69–109.
- Dyson 1985
R. H. Dyson, Comments on Hissar painted red ware. In: J. L. Huot/M. Yon/Y. Calvet (eds.), *De L'Indus aux Balkans, Recueil à la mémoire de Jean Deshayes* Paris 1985) 337–345.
- Emberling 2002
G. Emberling/J. Robb/J. D. Speth/H. T. Wright, Kunji Cave: Early Bronze Age burials in Luristan. *Iranica Antiqua* 37. C. C. Lamberg-Karlovsky Volume, 2002, 47–104.
- Fahimi/Helwing 1385 (2006)
H. Fahimi/B. Helwing, Gozāreš-e moqadamāti čāhāromin fasl-e pažuheš-hāye bāstānšenāsi He'ate moštarak-e Iran va Ālmān dar Arismān – 1383 (Persian with English abstract). *Gozāreš-hāye bāstānšenāsi* 5, 1385 (2006) 9–24.
- Franke-Vogt 1991
U. Franke-Vogt 1991, Die Glyptik aus Mohenjo Daro. Uniformität und Variabilität in der Induskultur: Untersuchungen zur Typologie, Ikonographie und räumlichen Verteilung. *Baghdader Forschungen* 13 (Mainz 1991).
- Ghirshman 1938
R. Ghirshman, *Fouilles de Sialk, près de Kashan* 1933, 1934, 1937 (I) (Paris 1938).
- Görsdorf 2003
J. Görsdorf, Datierungsergebnisse des Berliner 14C-Labors 2002. *Eurasia Antiqua* 9, 2003, 359–366.
- Görsdorf 2004
Görsdorf, J., Datierungsergebnisse des Berliner 14C-Labors 2003. *Eurasia Antiqua* 10, 2004, 401–409.
- Görsdorf 2006
Görsdorf, J., Datierungsergebnisse des Berliner 14C-Labors 2005. *Eurasia Antiqua* 12, 2006, 385–390.
- Helwing 2005a
B. Helwing, Early complexity in highland Iran: Recent archaeological research into the Chalcolithic of Iran. *TÜBA-AR: Turkish Academy of Sciences Journal of Archaeology* 8, 2005, 39–60.
- Helwing 2005b
B. Helwing, Long-distance relations of the Iranian highland sites during the late Chalcolithic period: New evidence from the Joint Iranian-German excavations at Arismān. In: Ute Franke-Vogt/Hans-Joachim Weisshaar (eds.), *South Asian Archaeology 2003. Proceedings of the seventeenth International Conference of the European Association of South Asian Archaeologists* (7–11 July 2003, Bonn), *Forschungen zur Archäologie ausser-europäischer Kulturen* (Aachen 2005) 171–178.
- Helwing 2005c
B. Helwing, Winckelmann-Feier 2004. Early mining and metallurgy on the western Iranian Plateau.: First results of the Iranian – German archaeological research at Arismān, 2000–2004. *Archäologische Mitteilungen aus Iran und Turan* 37, 2005, 423–434.
- Helwing in prep.-a
B. Helwing, The Proto-Elamite pottery. In: Chegini et al. in prep.
- Helwing in prep.-b
B. Helwing, Small finds from Arismān, trenches A, B, C, D and E. In: Chegini et al. in prep.
- Helwing/Thomalsky in prep.
B. Helwing/J. Thomalsky, Arismān lithic industries. In: Chegini et al. in prep.
- Herrmann 1964
G. Herrmann, Lapis lazuli: the early phases of its trade. *Iraq* 30, 1964, 21–57.
- Howard 1989
S. M. Howard, Chapter VI. Sequence of the main mound. In: Dyson/Howard 1989, 55–68.
- Majidzadeh 1979
Y. Majidzadeh, An early prehistoric coppersmith workshop at Tepe Ghabristan. In: *Akten des VII. Internationalen Kongresses für Iranische Kunst und Archäologie, Munich, 1976. Archaeologische Mitteilungen aus Iran und Turan, Suppl. 6* (Berlin 1979) 82–92.
- Masson 1988
V. M. Masson 1988, *Altyn-Depe. University Museum Monograph* 55 (Philadelphia 1988).
- Maurer Trinkhaus 1989
K. Maurer Trinkhaus, Chapter XV. Archaeological survey of the Damghan Plain, Northeast Iran, 1976–1977. In: Dyson/Howard 1989, 135–141.
- Mierop 2002
M. van der Mierop, In search of prestige: Foreign contacts and the rise of an elite in Early Dynastic Babylonia. In: Erica Ehrenberg (ed.), *Leaving no stones unturned. Essays on the Ancient Near East and Egypt in Honor of Donald P. Hansen* (Winona Lake (IN) 2002) 125–137.
- Moorey 1999
P. R. S. Moorey, Blue stones in the Ancient Near East: Turquoise and lapis lazuli. In: Annie Caubet (ed.), *Cornaline et pierres précieuses: La Méditerranée de l'antiquité à l'Islam* (Paris 1999) 175–188.
- Nissen 1999
H. J. Nissen, *Geschichte Alt-Vorderasiens. Oldenbourg Grundriss der Geschichte* 25 (München 1999).
- Pernicka 2004
E. Pernicka, Kupfer und Silber in Arismān und Tappeh Sialk und die frühe Metallurgie in Iran. In: Stöllner et al. (2004) 232–239.
- Pigott 1989
V. C. Pigott, Chapter IV: Archaeo-metallurgical investigations at Bronze Age Tappeh Hesār, 1976. In: Dyson/Howard 1989, 25–33.
- Pittman 1994
H. Pittman, The glazed steatite glyptic style: The structure and function of an image system in the administration of Protoliterate Mesopotamia. *Berliner Beiträge zum Vorderen Orient* 16 (Berlin 1994).
- Pollock 1999
S. Pollock, *Ancient Mesopotamia, The Eden that never was. Case Studies in Early Societies* (Cambridge 1999).
- Postgate/Campbell 2002
J. N. Postgate/S. Campbell (eds.), *Artefacts of Complexity. Tracking the Uruk in the Near East. Iraq Archaeological Reports* 5 (Warminster 2002).
- Potts 2001
D. T. Potts, Excavations at Tepe Yahya, Iran, 1967–1975: the third millennium. *Bulletin of the American*

- School of Prehistoric Research 45 (Cambridge, Mass. 2001).
- Rosenberg 1989
M. Rosenberg, Chapter VIII. The evidence for craft specialization in the production of chipped stone blades at Tappeh Hesār. In: Dyson/Howard 1989, 111–118.
- Rothman 2001
M. S. Rothman (ed.), Uruk Mesopotamia and its neighbors: Cross-cultural interaction and its consequences in the era of state formation. School of American Research Advanced Seminar Series (Santa Fe 2001).
- Sajjadi 2000 (1380)
S. M. S. Sajjadi, Šahr-e Sukhte (in Persian) (Tehran 1380 (2000)).
- Salvatori/Vidale 1997
S. Salvatori/M. Vidale, Shahr-i Sokhta 1975–1978: Central Quarter excavations. Preliminary report. Reports and Memoirs, Series minor 1 (Roma 1997).
- Schmidt 1933
E. F. Schmidt, Tepe Hissar Excavations 1931. The Museum Journal 23, 1933, fasc. 4, 323–483.
- Schmidt 1937
E. F. Schmidt, Excavations at Tepe Hissar, Damghan. Publications of the Iranian Section of the University Museum (Philadelphia 1937).
- Stein 1999
G. J. Stein (ed.), The Uruk expansion: Northern perspectives from Hacinebi, Hassek Höyük, and Gawra. Paléorient 25, 1999.
- Stöllner et al. 2004
T. Stöllner/R. Slotta/A. Vatandoust (eds.), Persiens antike Pracht (Bochum 2004).
- Sumner 2003
W. M. Sumner, Early urban life in the land of Anshan: Excavations at Tal-e Malyan in the highlands of Iran. Malyan Excavation Reports 3; University Museum Monograph 117 (Philadelphia 2003).
- Tallon 1987
F. Tallon, Métallurgie Susienne I. De la fondation de Suse au XVIII^e siècle avant J.-C. Notes et Documents des Musées de France 15 (Paris 1987).
- Tallon 1995
F. Tallon (ed.), Les pierres précieuses de l'Orient ancien. (Paris 1995).
- Tosi 1989
M. Tosi, Chapter III: The distribution of industrial debris on the surface of Tappeh Hesār as an indication of activity areas. In: Dyson/Howard 1989, 13–24.
- Tosi/Bulgarelli 1989
M. Tosi/M. G. Bulgarelli, Chapter V: The stratigraphic sequence of squares DF 88/89 on South Hill, Tappeh Hesār. In: Dyson/Howard 1989, 35–53.
- Tosi/Piperno 1973
M. Tosi/M. Piperno, Lithic technology behind the ancient lapis lazuli trade. Expedition 16, 1973, 15–23.
- Voigt 1987
M. Voigt, Relative and absolute chronologies for Iran between 6500 and 3500 cal BC. In: O. Aurenche/J. Evin/F. Hours (eds.), Chronologies in the Near East: Relative Chronology and Absolute Chronology 16,000–4,000 BP., British Archaeological Reports, Int. Ser. 379 (Oxford 1987) 615–646.
- Weisgerber 2004
G. Weisgerber, Schmucksteine im Alten Orient (Lapislazuli, Türkis, Achat, Karneol). In: Stöllner et al. (2004) 64–74.

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Abstract

The article presents a comparison of material culture from Tappeh Hesār and Arisman, two sites occupied during the 4th to early 3rd mill. BC on opposite sides of the Central Iranian desert. Both sites developed into specialized craft production centers during the 4th mill. BC, Tappeh Hesār focussing on lapis lazuli processing and Arisman on copper and silver production: both catered to the growing demands of the emerging archaic states in Uruk period Mesopotamia. While for the older period, a parallel development can be stated for the two sites, the later centuries

of the 4th mill. BC bring a divergent development, whereby Hesār is strongly oriented towards the north and the steppes of Turkmenistan, while Arisman displays strong ties with the Proto-Elamite culture of southern Iran. These divergent paths of development that are apparently linked to different cultural affiliations become decisive for the subsequent development of the earlier 3rd mill. BC. While the lapis lazuli trade via Tappeh Hesār continues throughout the Bronze Age, the Proto-Elamite sphere becomes more and more isolated. Trade partners in Mesopotamia search for new counterparts across the Persian Gulf, and, subsequently, the Proto-Elamite sites are fully abandoned.